

WHAT IS CLAIMED IS:

1. An electrode for fuel cell, which comprises:

(a) a catalyst layer comprising catalyst particle;

and

(b) a gas diffusion layer comprising a porous polymer containing an electro-conductive filler.

2. The electrode for fuel cell according to Claim 1, wherein said a gas diffusion layer further comprises an electro-conductive backbone in which said porous polymer is applied.

3. The electrode for fuel cell according to Claim 2, wherein said electro-conductive backbone comprises an aggregate of carbon fibers.

4. The electrode for fuel cell according to Claim 2, wherein said electro-conductive filler comprises a chopped carbon fiber.

5. The electrode for fuel cell according to Claim 2, wherein said electro-conductive filler comprises a carbon particle.

6. The electrode for fuel cell according to Claim 2, wherein said porous polymer comprises a fluoropolymer.

7. The electrode for fuel cell according to Claim 2, wherein said fluoropolymer comprises a polyvinylidene fluoride (PVdF).

8. The electrode for fuel cell according to any one of Claims 1 to 7, wherein said gas diffusion layer has a porosity of from 45% to 95%.

9. A process for the preparation of an electrode for fuel cell, which comprises:

(a) a step of dispersing an electro-conductive filler in a solution (1) comprising a polymer and its solvent to obtain a dispersion;

(b) a step of subjecting said dispersion to phase separation of the polymer and the solvent to form a gas diffusion layer comprising porous polymer containing the filler; and

(c) a step of applying a paste comprising a catalyst particle to said gas diffusion layer.

10. A process for the preparation of an electrode for fuel cell comprising:

(a) a step of forming a catalyst layer containing a catalyst particle;

(b) a step of dispersing an electro-conductive filler in a solution (1) comprising a polymer and its solvent to obtain a dispersion

(c) a step of applying the dispersion on said catalyst layer; and

(d) a step of subjecting said dispersion applied to the catalyst layer to phase separation of the polymer and

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solvent to form a gas diffusion layer comprising porous polymer containing the filler.

11. A process for the preparation of an electrode for fuel cell comprising:

- (a) a step of forming a catalyst layer containing a catalyst particle;
- (b) a step of laminating an electro-conductive backbone on said catalyst layer;
- (c) a step of dispersing an electro-conductive filler in a solution (1) comprising a polymer and its solvent to obtain a dispersion;
- (d) a step of applying the dispersion in said electro-conductive backbone; and
- (e) a step of subjecting said dispersion incorporated in said electro-conductive backbone to phase separation of the polymer and solvent to cause said electro-conductive backbone containing a porous polymer, wherein the porous polymer contains the electro-conductive filler.

12. A process for the preparation of an electrode for fuel cell comprising:

- (a) a step of dispersing an electro-conductive filler in a solution (1) comprising a polymer and its solvent to obtain a dispersion;
- (b) a step of applying the dispersion in an electro-conductive backbone;

(c) a step of subjecting the dispersion incorporated in said electro-conductive backbone to phase separation of polymer and solvent to cause the electro-conductive backbone containing a porous polymer, wherein the porous polymer contains said electro-conductive filler; and

(d) a step of laminating said electro-conductive backbone containing the said porous polymer on a catalyst layer containing a catalyst particle.

13. The process for the preparation of an electrode for fuel cell according to any one of Claims 9 to 12, wherein said phase separation is accomplished by extracting said solvent from said dispersion by a solution (2) which is insoluble for the polymer and is compatible with the solvent.

14. A fuel cell comprising an electrode according to any one of Claims 1 to 7.

15. The fuel cell comprising an electrode according to Claim 8.

16. A fuel cell comprising an electrode prepared by the preparation process according to any one of Claims 9 to 12.

17. A fuel cell comprising an electrode prepared by the preparation process according to Claim 13.